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 DATE: 25 August 1969
 SUBJECT: More about zero optics problem after CSI backup for Apollo 11.

During the gimbal trim test started at 125:19:20, the CDUT (optics CDU trunnion angle) was seen to dive into the stops 125:19:40 to 125:21:00 Channel 33 bit 5 was indicating G&N control of optics during this time but Channel 12 bit 11 (optics DAC off) was set which should have kept the shaft and trunnion from following the SPS trim signals.

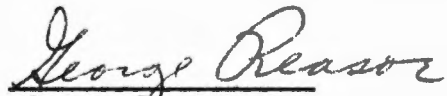
Once the trunnion is driven into the stops, the computer can no longer position it correctly because CDUT repeats itself and would contain the same value at 90° as it would at 0° .

Looking at the plot of CDUT from memo AG/MIT 32-69 it appears that the trunnion never was correct. It looks all right at 125:28 because CDUT never required any angle larger than $+8.86^\circ$ which is really into the stops ($+98.86^\circ$). The problem becomes more obvious after the maneuver because the computer can not drive to $+22^\circ$ and stays instead driven into the stops from 125:34 to 125:36. When zero optics is performed the 64.03 trunnion angle at 125:36:20 indicates that it was really at 98.86 and had to go through 64.03 to get back to zero.

It is understood that systems have been seen to drift into the stops in this configuration during testing, (see AC-KSC 9-123) so the solution appears to be always zero optics before going into auto optics.

Another solution might be to have CHAN 12 bit 11 do the optics zeroing for you by changing some PSA relay wiring, since this bit does not work as advertised anyway.

Chan 12 bit 10 (zero optics) may also solve the problem if it were set when ever CHAN 12 bit 11 is set.


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GR/mb